

WHAT IS CLAIMED IS:

- 1 1. A method for communicating, comprising:
2 characterizing a set of two or more communication channels;
3 determining a forward-time delay value based on the communication
4 channels and based on a common composite matrix;
5 determining a time-reverse delay value based on the received
6 communication signal and based on the common composite matrix;
7 selecting one of the forward-time delay value and the time-reverse delay
8 value; and
9 equalizing a received signal based on the selected delay value.
- 1 2. The method of claim 1, wherein the forward-time delay is determined
2 based on a minimum-mean-square-error technique.
- 1 3. The method of claim 2, wherein the time-reversed delay is determined
2 based on a minimum-mean-square-error technique.
- 1 4. The method of claim 3, wherein the selected delay has a smaller mean-
2 square-error than the other delay.
- 1 5. The method of claim 1, further comprising estimating a number of
2 symbols based on the selected delay.
- 1 6. The method of claim 5, wherein the estimated symbols are estimated
2 based on a decision-feedback-estimation (DFE) technique.
- 1 7. The method of claim 6, wherein the detected symbols are estimated based
2 on a minimum-mean-square-error - decision-feedback-estimation (MMSE-DFE)
3 technique.
- 1 8. The method of claim 5, wherein the estimated symbols are estimated
2 based on an advanced delayed decision feedback sequence estimation (ADDFSE)
3 technique.
- 1 9. The method of claim 2, wherein the received signal is received using a
2 plurality of receive devices.
- 1 10. The method of claim 9, wherein at least a first portion of the received
2 signal received by a first receive device is delayed using the selected delay.

1 11. A communication device, comprising:
2 a channel estimation device that characterizes a set of two or more
3 communication channels;
4 a forward-time device that determines a set of one or more forward-time
5 delays based on the set of communication channels and a common composite matrix;
6 a time-reverse device that determines a set of one or more time-reverse
7 delays based on the set of communication channels and the common composite matrix;
8 and
9 a selector that selects one of the one of the set of forward-time delays and
10 the set of time-reverse delays to produce a set of selected delays.

1 12. The device of claim 11, wherein the set of forward-time delays is
2 determined based on a minimum-mean-square-error technique.

1 13. The device of claim 12, wherein the set of time-reverse delays is
2 determined based on a minimum-mean-square-error technique.

1 14. The device of claim 13, wherein the set of selected delays has a smaller
2 mean-square-error than the other set of delays.

1 15. The device of claim 11, further comprising an equalizer that estimates a
2 number of symbols based on the selected set of delays.

1 16. The device of claim 15, wherein the estimated symbols are estimated
2 based on a decision-feedback-estimation (DFE) technique.

1 17. The device of claim 16, wherein the detected symbols are estimated based
2 on a minimum-mean-square-error - decision-feedback-estimation (MMSE-DFE)
3 technique.

1 18. The device of claim 15, wherein the estimated symbols are estimated
2 based on an advanced delayed decision feedback sequence estimation (ADDFSE)
3 technique.

1 19. The device of claim 11, further comprising a plurality of receive devices.

1 20. The device of claim 19, wherein a first portion of a received signal
2 received by a first antenna is delayed relative to a second portion of the received signal
3 received by a second antenna.